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MEMORANDUM

SUBJECT: EPA Comments, Bradford Island Groundwater Sampling Workplan and QAPP

FROM: Helen Bottcher

TO: Chris Budai and Dan Carlson, USACE Portland District

DATE: February 4, 2022

Document Reviewed:

> *Draft Workplan with Quality Assurance Project Plan for Groundwater Sampling at Upland OU, Bradford Island*, Cascade Locks, Oregon. Prepared by U.S. Army Corps of Engineers, Portland and Seattle Districts. Dated January 14, 2022

This memo provides comments from the U.S. EPA on the Draft Workplan and Quality Assurance Project Plan (QAPP) for Groundwater sampling at the Bradford Island Site. Overall, the document does a good job of describing the sampling work to be performed. However, it appears to be missing several important components of a Quality Assurance Project Plan. We will send a recent example of a groundwater sampling QAPP from another project in EPA Region 10 and current EPA's QAPP guidance along with these comments.

Table of Contents, Table 10. This table's title should be holding times for *Groundwater* (not soil) Samples. The table name on page 28 is correct, this is just a typo in the table of contents.

List of Acronyms. Typo. GC-MS should be gas chromatography - mass spectrometry.

List of Acronyms. This list includes JHA - Job Hazard Analysis, but elsewhere the document uses the term AHA - Activity Hazard Analysis.

List of Acronyms. PHOSP is used in Table 2 but not defined in the Acronym List.

Table 3, Analytical Labs and Contacts, page 4. This is just an observation, not a comment. We note that some samples will be shipped to Illinois. It is important for cooler packing procedures and hold times to be aware of this. For example, the sampling crew may want to use more ice in the coolers headed to Illinois, confirm the lab will be able to receive samples that arrive over the weekend, etc. Will samples heading to Tacoma be shipped or hand-delivered?

Section 1.2.2, Landfill History, page 6. Is there any reason to suspect the presence of Per-and Polyfluoroalkyl Substances (PFAS), such as debris from burn pits, fire fighting foams, or building materials with water / stain resistant coatings? If yes, we may need to sample for PFAS compounds in this or a future sampling event.

Section 1.2.2, Landfill History, page 6. This comment is beyond the scope of the groundwater sampling effort, but a new survey to map seeps may be warranted before the Landfill AOPC is remediated.

Section 1.4, Secondary Data Evaluation, page 19. Temperature, specific conductivity, DO, ORP, and turbidity will be measured and recorded during well purging. It would be helpful to state that here or elsewhere in the QAPP text.

Table 4, DQOs, page 12. Should we add DQO-3, Confirm the direction of groundwater flow is consistent with the CSM? Or do we have enough data from previous (and reasonably recent) investigations to be confident in the direction of groundwater flow?

Table 5, Analytes, Page 16. Typo; p-cresol is misspelled (4-methylphenol).

Section 2.1.1, Well Redevelopment, page 21. Some additional details / definitions for the well redevelopment event would be helpful:

- How will excessive sedimentation be defined – an accumulation of 3 inches or more of sediment? Sediment that blocks more than 10 percent of the well screen depth?
- What percent change in the recharge rate will determine that well redevelopment is required?
- During the purge and recharge rate, will the wells be pumped dry?

The field crew will need to use their judgment in assessing the overall condition of the well and the appropriate redevelopment measures, but clearer guidelines will help ensure consistency between wells and minimize confusion and debate in the field.

Section 2.1.1, Well Redevelopment, page 22. What size Qwater Well Developer Tool will be used? Are all the well casings the same diameter, or will you need different sizes of the tool? Is there a backup plan in case the tool doesn't work or is damaged in the first well?

Section 2.1.2, Sample Collection Procedures, page 25. Please check for the presence of NAPL and petroleum odors before sampling each well (and add a space for these observations on the field forms).

Section 2.1.2, Sample Containers, page 27. Some text to describe filling the bottles would be helpful here. For example, you may want to specify that bottles won't be opened until the well is purged and you are ready to begin collecting samples, that bottles will be filled directly from the tubing attached to the pump, etc. If there are multiple sample bottles and it is important to fill them in a particular order, the order should be specified. If both filtered and unfiltered samples will be collected, that should be explained.

Section 2.1.6, Field Documentation Procedures, page 29. does not mention photos. Please specify what if any photos are required. Please do take some photos, especially of the well redevelopment – we will be curious to see the condition of water recovered from the wells.

Section 2.3.1.3, page 31, Field Blanks. Specify the source of DI water. This is not critical for the QAPP, but please ensure the source of DI water used in the field and the source of water used to decontaminate equipment between wells is recorded in the field logs or other project records.

Section 5.1, Review of Laboratory Data, page 34. Data validation to Stage 2A should be supplemented with State 4 validation for 10% of the samples. In addition to increasing overall confidence in the data, this will ensure that the labs provide the full data packages, not just the results, and that a chemist reviews a portion of the raw data rather than relying solely on electronic data review.

Section 5.1, Review of Laboratory Data, page 35. The text here uses the words Accuracy, Precision and Completeness, but does not define project-specific objectives. What is the acceptable window for analytical accuracy (percent recovery)? How will precision be calculated from duplicate samples? Is the goal for completeness 80 percent? 90 percent? It is important to define these things now, so we don't end up arguing later whether the data are sufficient to support site management decisions. Perhaps the QAPP for a previous investigation is still relevant and being followed for this sampling event. If that is the case, this document should point the reader to that QAPP. If not, there are critical elements of a QAPP missing from this document that need to be developed prior to the sampling event. At a minimum, this QAPP should include a table showing the screening levels to which the data from this event will be compared, and clear definitions of acceptable analytical accuracy, precision, and completeness. A QAPP should describe precisely how the data will be used and it should clearly demonstrate, in a step-wise fashion, that the data will be of sufficient quality to answer the questions identified in the DQO table.